

## Financial Markets and Aggregate Demand

### *Additional Homework Problems*

ECON 3133

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1. Suppose the economy is initially described by the following equations.

$$\begin{aligned}Y &= C + I + G + (X - IM) \\C &= 220 + 0.63 \times Y \\I &= 1,000 - 2,000 \times R \\(X - IM) &= 525 - 0.1 \times Y - 500 \times R \\M^S &= (0.1583 \times Y - 1,000 \times R) \times P\end{aligned}$$

The income tax rate equals to 30% and the price level is 1.

- Find the equilibrium level of GDP ( $Y^{**}$ ) that occurs when the money supply is \$900 billion and government spending is \$1,200 billion.
  - Use the IS curve and the LM curve to find the interest rate that occurs in this same situation. Explain why you get the same answer in each case.
  - Use the consumption function to find the level of consumption, the investment function to find the level of investment, and the net export function to find the level of net exports for this same situation.
  - Show that the sum of your answers for consumption, investment, government spending, and net exports equals GDP.
  - Repeat all the previous calculations if government spending increased to \$1,300 billion. How much investment is crowded out as a result of the increase in government spending? How much are net exports crowded out?
2. Savings and budget deficits: This problem pertains to the numerical example in the box on page 196 and makes use of the answers to Problem 1.
- Set government spending at \$1,200 billion and the money supply at \$900 billion. Calculate government saving (the budget surplus). Calculate the level of private saving, and show that private saving plus government saving plus rest of world saving equals investment.
  - Now repeat your calculations for a level of government spending equal to \$1,300 billion. Does private saving plus government saving plus rest of the world saving still equal investment? How does each element in the identity change?
  - Explain why private saving increases as a result of government spending. In light of your calculations evaluate the statement: "Government budget deficits absorb private saving that would otherwise be used for investment purposes."

3. The following relationships describe the imaginary economy of Nineland:

$$Y = C + I \text{ (Income identity)}$$

$$C = 90 + 0.9 \times Y \text{ (Consumption)}$$

$$I = 900 - 900 \times R \text{ (Investment)}$$

$$M^S = (0.9 \times Y - 900 \times R) \times P \text{ (Money demand)}$$

$Y$  is output,  $C$  is consumption,  $I$  is investment,  $R$  is the interest rate,  $M^S$  is the money supply, and  $P$  is the price level. There are no taxes, government spending, or foreign trade in Nineland.

The year is 1999 in Nineland. The price level is 1. The money supply is 900 in 1999.

- a. What are the equilibrium values of output and the interest rate in 1999? Sketch the IS curve and the LM curve for the year 1999 on a diagram and show the point where interest rate and output are determined. What happens in the diagram if the money supply is increased above 900 in 1999?
  - b. Sketch the aggregate demand curve. Show what happens in the diagram if the money supply is decreased below 900 in 1999.
  - c. Derive an algebraic expression for the aggregate demand curve in which  $P$  is on the left-hand side and  $Y$  is on the right-hand side.
4. Consider the following statements: (i) the IS curve is steep when investment is insensitive to the interest rate; (ii) The LM curve is flat when money demand is insensitive to income; (iii) The LM curve is flat when money demand is sensitive to the interest rate; and (iv) The IS curve is flat when the marginal propensity to consume is high.
- a. Explain in words why each of these statements is true.
  - b. Confirm algebraically that each statement is true. (Hint: Begin by deciding which coefficient in the model changes. Then show how a change in that coefficient affects the expression for the slope of the IS or LM curve.)
5. Show how the IS curve and the LM curve can be shifted to get an increase in output without a change in interest rates. What kind of mix of monetary and fiscal policies is needed to do this? How should we shift the IS and LM curves if we wanted to get a reduction in interest rates while holding output constant?
6. Suppose that two administrations, one Democratic and the other Republican, both use fiscal and monetary policy to keep output at its potential level, but that the Democratic administration raises more in taxes and maintains a larger money supply than the Republican administration. You may assume output is identical in both administrations.
- a. On a single graph, show how the IS and LM curves of these two administrations differ.
  - b. Indicate whether the following variables will be higher under the Democratic or Republican administration, OR whether they will be unchanged: consumption, investment, net exports, government saving, and private saving.
  - c. Under which administration will foreign holdings of U.S. financial assets grow more slowly?